

[54] **GARBAGE COMPACTORS**

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[57]

ABSTRACT

In a garbage compactor for compressing refuse and other waste material in open containers by a vertically operating device comprising a piston and a piston rod driven by an electric motor by a transmission means, a means activated by compression forces exerted against the downward movement of the piston to automatically return the piston to an inactive position above the upper edge portion of the container by a change in the direction of rotation of the electric motor.

6 Claims, 3 Drawing Figures

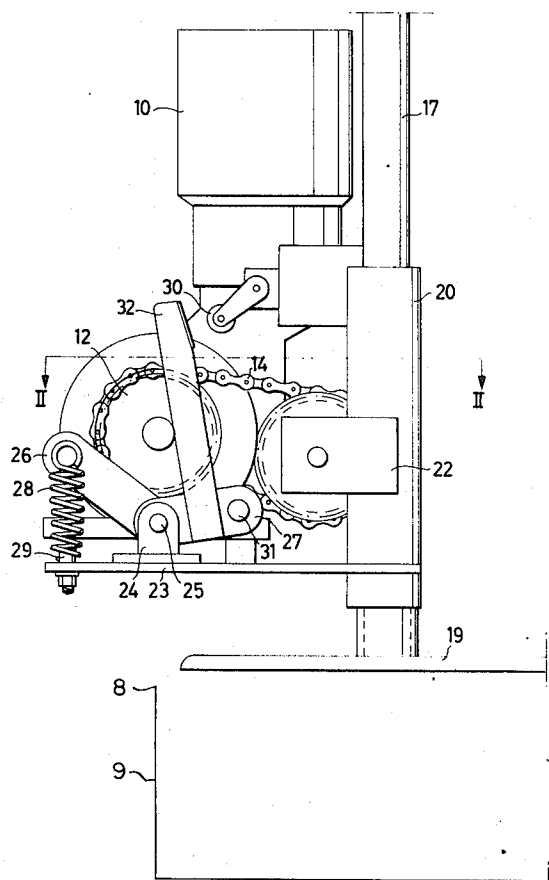
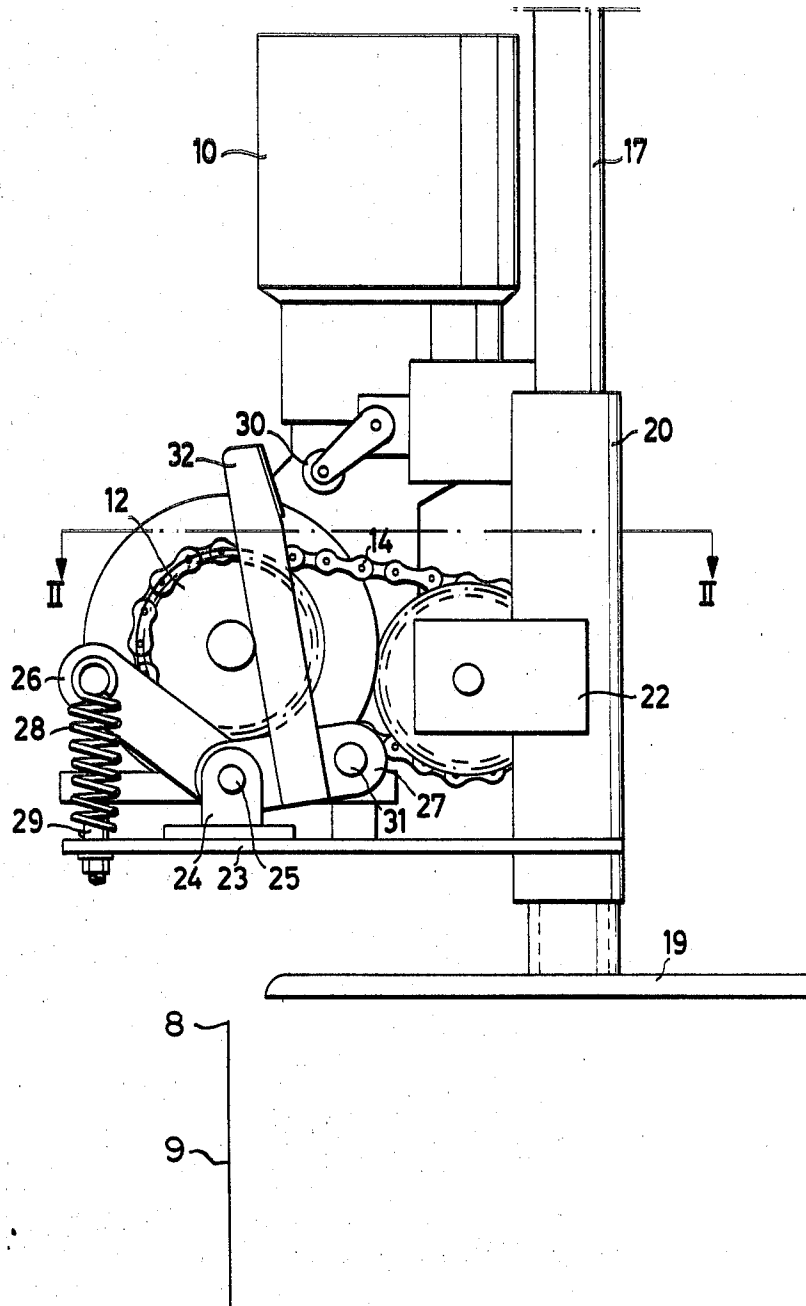


Fig. 1



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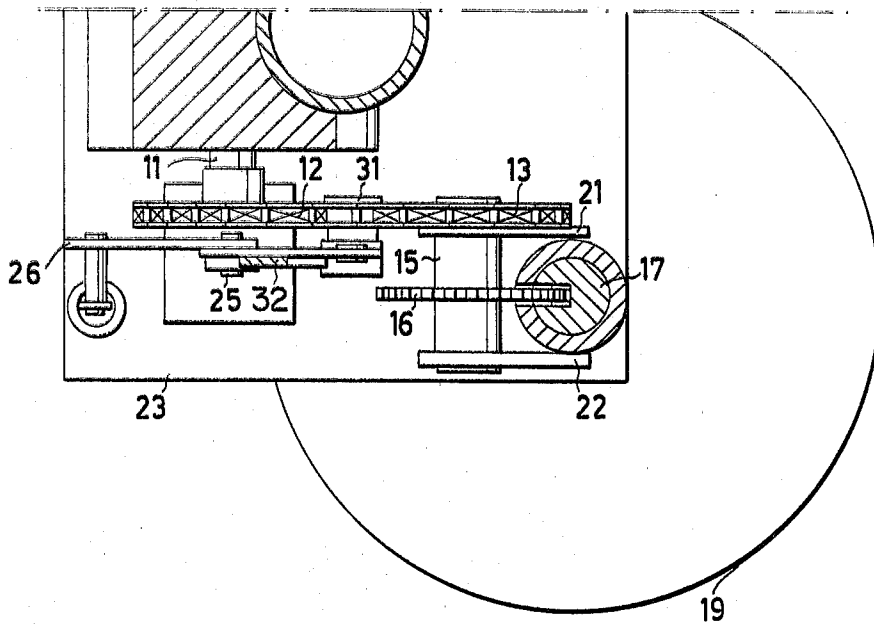
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Fig. 2



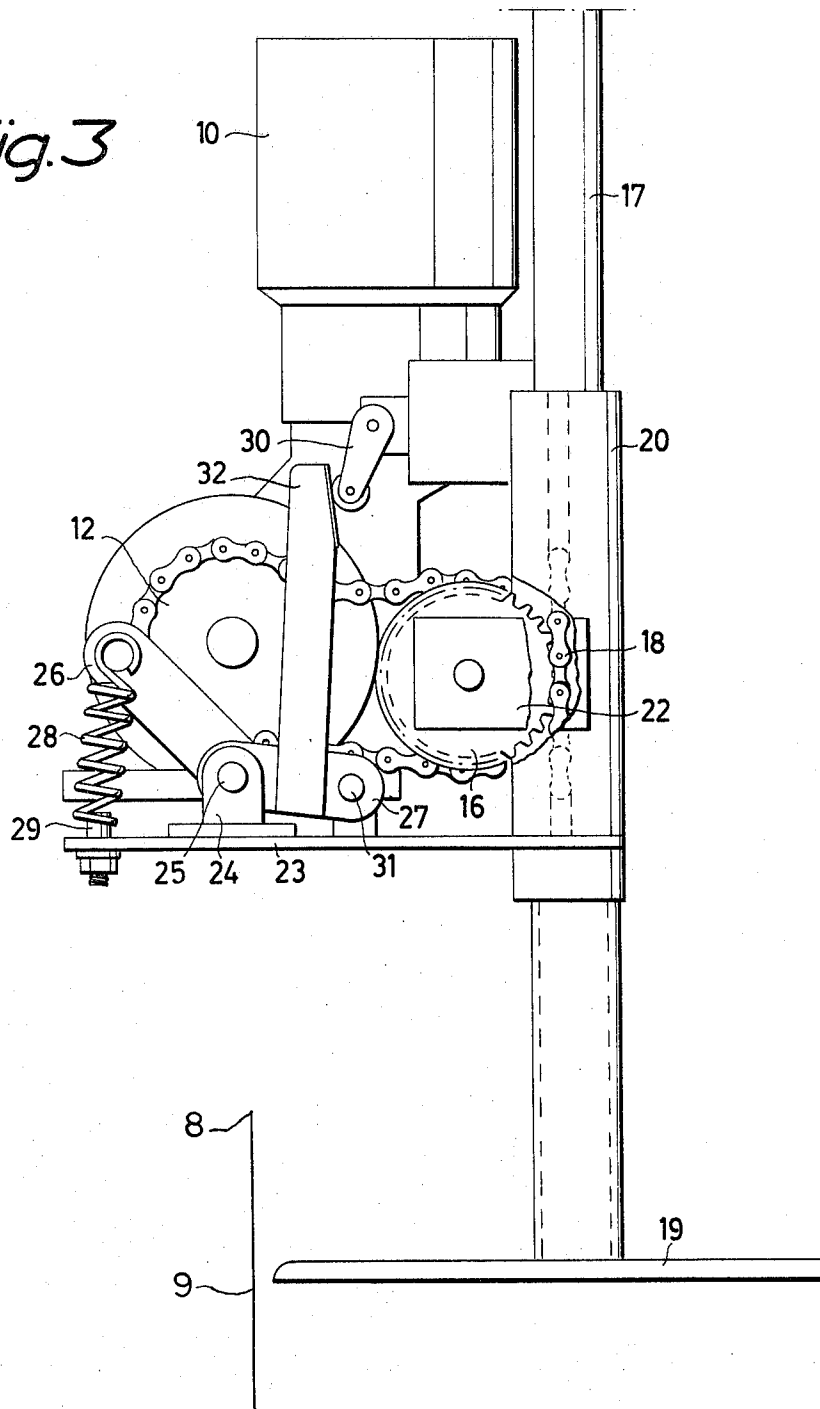
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Fig. 3



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GARBAGE COMPACTORS

The present invention relates to an arrangement for collecting refuse and other waste material in open containers whereby it is possible to compress said garbage by a vertically operating device comprising a piston and a piston rod driven by an electric motor via a transmission, said device being arranged to automatically return to an inactive position above the upper edge portions of the container by change of the direction of rotation of the electric motor once a compression cycle related to material to be treated having been finished.

It is an object of the invention to attain a simple mechanically working device, which functions reliably under all operating conditions, and which at the proper moment by force of the counterpressure arising during the compressing cycle receives an impulse to effect the automatic return stroke of the piston to rest position above the upper edge portions of the containers.

The solution of the problem is substantially characterized by a transmission device comprising a band or chain or the like between at least two transmission pulleys or wheels and arranged to directly or indirectly move the piston, whereby the chain is designed in such a way that by the resistance offered by the garbage in the container during the compression operation effected by the piston it actuates a device subjected to pressure by a spring, said device in its turn being arranged to actuate a device for changing the direction of the rotation of the motor.

An embodiment of the invention is illustrated in the accompanying drawings, in which

FIG. 1 shows a side elevational view of the arrangement according to the invention, the piston just being at a point during the downward stroke to perform the compression of garbage in a container

FIG. 2 is a cross sectional view along the line II — II in FIG. 1, and

FIG. 3 shows the arrangement according to FIG. 1, where the piston just has completed a compressing operation and is at a point of its upward return stroke towards inactive position.

10 indicates an electric motor, which via a shaft 11 transmits the driving power of the motor to a transmission wheel 12, by way of example a sprocket wheel. At a certain distance from the sprocket wheel 12, there is another similar wheel 13, and the wheels 12,13 are interconnected by an endless chain 14, which is not under tension or which exhibits a certain slack. The transmission 12 — 14 can of course also be a belt or line transmission or a similar device. The sprocket wheel 13 is fixed to a shaft 15 carrying a sprocket wheel 16. The sprocket wheel 16 engages a chain 18 which is stretch mounted in a groove milled in a piston rod 17 parallel to its longitudinal axis. The piston rod 17, the lower portion of which carries a piston 19 for the purpose of compressing the garbage (not shown) of an open container 9, not shown to scale is partly guided in a tube 20, provided with ears 21,22, in which the shaft of sprocket wheel 16 is journaled.

On a horizontal disc 23 an ear 24 is mounted carrying in different directions pointing links 26,27 on a pivoting shaft 25. The link 26 is at its extreme outer end connected with one end of a tension spring 28, the other end of which is fixed around a pin 29 of the plate 23. The other link 27 pivoting around the approximately centrally located shaft 25, is for one part provided with a shaft 31, pointing inwards towards the chain transmission device 11,12, 13, 14, which shaft 31 is rotatably mounted in the link 27, and for another part said link is provided with an arm 32 in fixed and approximately perpendicular

mounting thereto, the upper portion of said arm being arranged to actuate a device 30 serving the purpose to reverse the direction of rotation of the motor 10.

The arrangement functions in the following manner:

When by means not shown the motor 10 has been started, the transmission 11 — 14 is actuated and the sprocket wheel 16 moves the piston rod in downward direction. Thereby the lower portion of the chain 14 approximately between the sprocket wheels 12,13 will run in an upwards pointing curved path over the shaft 31 of the link 27. The piston 19 is moved downwards compressing the garbage content of the container 9 with a predetermined force regulated by the spring 28 (FIG. 3). When the piston 19 contacts and compresses the garbage a counterpressure arises by the resistance offered by the material under pressure. The transmission 12, 13, 14, 16 continues its rotating motion at undiminished speed and when the counterpressure mentioned amounts to the force predetermined by the spring 28 the curvature of the path of the chain is influenced to the effect that it is flattened out thereby pressing the shaft 31 downwards causing the link 27 to pivot in downward direction round the shaft 25 urging the arm 32 against the force of the spring 28 of the link 26 to actuate the device 30 for reversal of the direction of the rotation of the motor 10. The piston rod 19 now moves upwards until it arrives at a position at a certain distance above the upper edge 8 of the container 9, when a switch (not shown) stops the motor, whereby the device 26,27,28 actuated by the spring 29 returns to the starting position. During the return movement the curvature of the path of the chain is between the upper portions of the sprocket wheels 12,13 (FIG. 3).

I claim:

1. In a garbage compactor for compressing refuse and other waste material, including at least one upwardly open container, a reversible motor and transmission means, means for compressing refuse in said container comprising a piston and a piston rod having an upper idle position above the upper edge of said container and a lower position in compressing contact with refuse in said container, said transmission means comprising transmission wheels driven by said motor, at least one driving wheel for driving said piston rod, driving connections between one of said transmission wheels driven by said motor and the piston rod driving wheel and driving means with a certain slack between said transmission wheels, spring-loaded means for sensing changes in said certain slack and means associated with said spring-loaded means for reversing said motor.

2. The garbage compactor of claim 1 wherein said transmission wheels are sprocket wheels and said driving means is an endless chain extending between said sprocket wheels.

3. The garbage compactor of claim 1 wherein said piston rod is supported over part of its length by a vertical guide tube.

4. The garbage compactor of claim 1 wherein said driving wheel for driving said piston rod is a sprocket wheel and said piston rod is provided with a groove parallel to its axis in which a chain is stretch mounted.

5. The garbage compactor of claim 1 wherein said spring-loaded means for sensing changes in said certain slack is a spring-loaded pivoted arm having a spring mounted at one end and a rotating shaft mounted at the other end in a spring-loaded contact with said certain slack.

6. The garbage compactor of claim 5 wherein said means associated with said spring-loaded means for reversing said motor is a perpendicular arm rigidly mounted on said spring-loaded pivoted arm adjacent said rotating shaft which perpendicular arm on pivoting actuates a reversible switch on said motor.

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